

# Application Data Sheet

## No.29

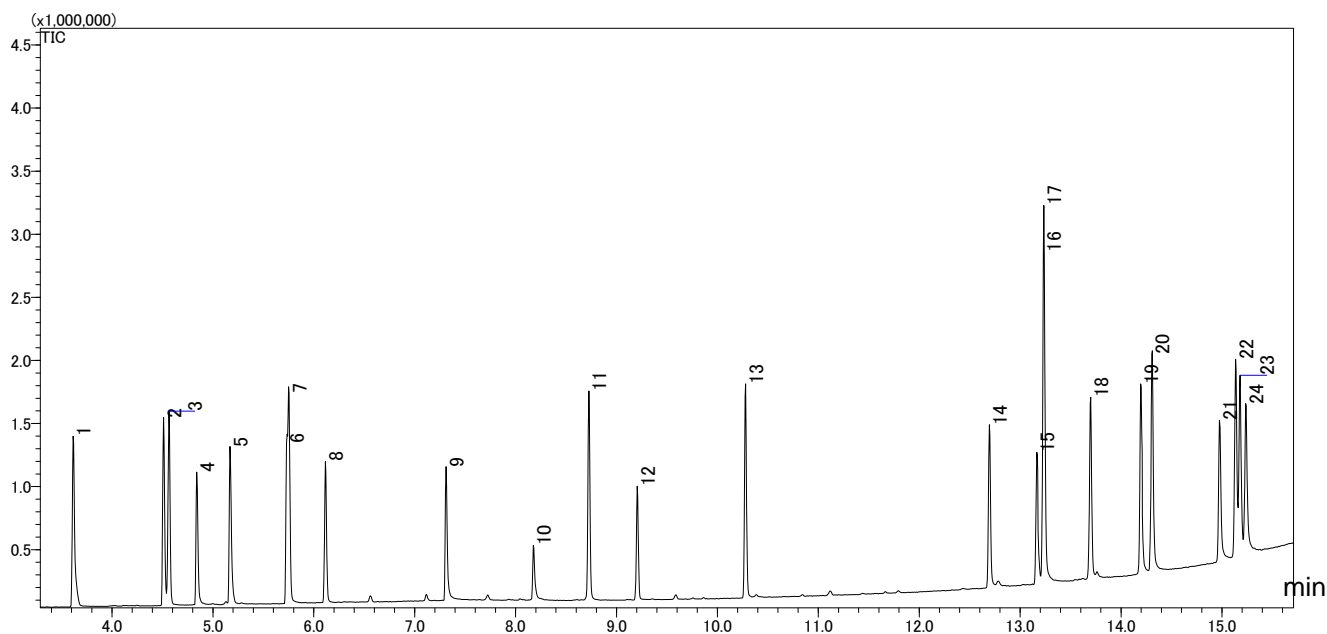
### GCMS

Gas Chromatograph Mass Spectrometry

## Analysis of Specific Aromatic Amines Formed From Azo Dyes and Pigments

Reductive cleavage of azo radicals from azo dyes and azo pigments comprising azo radicals (-N=N-) can form aromatic amines that are suspected carcinogens. Of these aromatic amines, 22 are designated as specific aromatic amines in Europe (EN 14362:2003) and 24 in China (GB/T 17592-2006), and the use of azo dyes and pigments that form these specific aromatic amines are regulated. The total ion current chromatogram (TIC) obtained from using GC-MS to measure a standard sample of the specific aromatic amines is shown here.

GC-MS	:GCMS-QP2010 Ultra	[MS]	
Column	:Rtx-35MS (L30 mL, X 0.32 mm I.D., df=0.25 μm)	Interface temperature	: 260°C
Glass insert	: Split insert with deactivated glass wool (P/N : 225-20803-01 )	Ion source temperature	: 200°C
[GC]		Measurement mode	: Scan
Vaporization chamber temperature	: 260°C	Mass range	: m/z 35-350
Column oven temperature	: 100°C (2min) -> (10°C/min) -> 320°C (10min)	Event time	: 0.3 sec
Injection mode	: Split(1:15)	Emission current	: 60 μA (normal)
Sampling time	: 1 min		
Carrier gas	: Helium		
Control mode	: Linear velocity (55/0 cm/sec)		
Sample injection quantity	: 1.0 μL		



1:o-toluidine	8:4-chloro-o-toluidine	14:4-aminoazobenzene	20:3,3'-dimethylbenzidine
2,3:2,4/2,6-xylidine	9:4-methyl-m-phenylenediamine	15:4,4'-oxydianiline	21:4,4'-thiodianiline
4:o-anisidine	10:4-methoxy-m-phenylenediamine	16:benzidine	22:3,3'-dichlorobenzidine
5:4-chloroaniline	11:2-naphthylamine	17:4,4'-methylenedianiline	23:4,4'-methylene-bis-(2-chloro-aniline)
6:p-cresidine	12:5-nitro-o-toluidine	18:o-aminoazotoluene	24:3,3'-dimethoxybenzidine
7:2,4,5-trimethylaniline	13:4-aminobiphenyl	19:4,4'-methylenedi-o-toluidine	